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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/905,349	07/13/2001	Jay Brian DeDontney	A-67178-1/MSS	7344

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EXAMINER

ZERVIGON, RUDY

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/905,349	<b>Applicant(s)</b> DEDONTNEY ET AL.	
	<b>Examiner</b> Rudy Zervigon	<b>Art Unit</b> 1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 January 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 4-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 4-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 13, 2005 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1, 4, 5, 8, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soichiro Kawakami (JP61037969) in view of Ohashi (JP10-177960)<sup>1</sup>. Soichiro Kawakami teaches a gas delivery metering tube (Figure 1) for delivering a gas in a plasma CVD process comprising:
- i. an elongated outer tube (3) having an inlet end (4/3 interface) and a closed end (opposite end), and one or more arrays of orifices (15) formed in the elongated outer tube (3) and extending along the substantial length of the elongated outer tube (3); an elongated inner tube (5) having open inlet (4/5 interface) and outlet (opposite 4/5 interface) ends, the elongated inner tube (5) being nested and axially aligned inside of the elongated outer tube (3) forming an effective annular space (20) there between, and wherein the outlet end of the

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<sup>1</sup> Machine translation from <http://www1.ipdl.jpo.go.jp>

Art Unit: 1763

elongated inner tube (5) terminates prior to the closed end (opposite end) of the elongated outer tube (3).

Soichiro Kawakami further teaches the gas delivery metering tube further comprising a single gas supply port (inherent, feeding item 5, Figure 1) coupled to the inlet end (at cut away of item 5) of the elongated inner tube (5) for supplying gas to the metering tube.

Soichiro Kawakami does not teach:

- i. a gas flow divider positioned adjacent the inlet ends of the elongated inner and outer tubes and having a first gas flow path coupled to the elongated inner tube (5) and a second gas flow path coupled to the annular space (20) between the elongated inner and outer tubes.
- ii. a gas delivery metering tube wherein the cross sectional area of the inside of the elongated inner tube (5) is approximately equal to the total cross sectional area of the plurality of small orifices in a flow divider
- iii. Soichiro Kawakami's inner tube extends a distance at least encompassing the arrays of orifices in the outer tube
- iv. Soichiro Kawakami's array of orifices (15) formed in the elongated outer tube (3) are configured to establish uniform backing pressure with Soichiro Kawakami's annular space (20), as claimed by amenden claim 1 - However, when the structure recited in the reference is substantially identical to that of the claims (see Applicant's Figure 5, 6a; [0031]), claimed properties or functions are presumed to be inherent (In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433 (CCPA 1977); MPEP 2112.01).

Ohashi teaches a fluid flow divider (upper portion of 41, Figure 4) having a first flow path ("Sz") and a second gas flow path (Sx) coupled to an annular space (Sx). Ohashi further teaches the

Art Unit: 1763

fluid flow divider being a disk (Figure 4) having a central orifice (17a) forming the first gas flow path and a plurality of small orifices (17b) forming the second gas flow path.

Ohashi further teaches a gas flow divider (upper portion of 61, Figure 6) which comprises a flange (see L shape of U/21 face, Figure 6) on the inlet end of the elongated inner tube (21, Figure 6), the flange having a lip (20, Figure 6) containing a plurality of small orifices (20a, Figure 6) forming the second gas flow path.

It would have been obvious to one of ordinary skill in that art at the time the invention was made to replace Soichiro Kawakami's support plate with Ohashi's fluid flow divider, with an optimal number of orifice (17a), such that it is positioned adjacent the inlet ends of Soichiro Kawakami's elongated inner and outer tubes and having a first gas flow path coupled to Soichiro Kawakami's elongated inner tube and a second gas flow path coupled to Soichiro Kawakami's annular space between the elongated inner and outer tubes, including dimensioning Soichiro Kawakami's gas delivery metering tube and inner tube wherein the cross sectional area of the inside of the elongated inner tube (5) is approximately equal to the total cross sectional area of the plurality of small orifices (15) in the flow divider.

Motivation to replace Soichiro Kawakami's support plate with Ohashi's fluid flow divider, with an optimal number of orifice (17a), such that it is positioned adjacent the inlet ends of Soichiro Kawakami's elongated inner and outer tubes and having a first gas flow path coupled to Soichiro Kawakami's elongated inner tube and a second gas flow path coupled to Soichiro Kawakami's annular space between the elongated inner and outer tubes is to distribute the delivered gas to both the elongated inner and outer tubes as taught by Ohashi for preventing particle adherence ("Problem to be solved") in Soichiro Kawakami's reactor (Figure 3). Further, motivation to

Art Unit: 1763

dimension Soichiro Kawakami's gas delivery metering tube and inner tube wherein the cross sectional area of the inside of the elongated inner tube is approximately equal to the total cross sectional area of the plurality of small orifices in the flow divider is to provide for the desired pressure gradient. Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art. (Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

4. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soichiro Kawakami (JP61037969) and Ohashi (JP10-177960) in view of Ishii (USPat. 5,685,942). Soichiro Kawakami and Ohashi are discussed above. Soichiro Kawakami and Ohashi do not teach:

- i. a gas supply port comprising a block having a pocket formed therein, the pocket being sealed with a cover to create a confined passage, and a gas supply connector coupled to the pocket for receiving a gas and a hollow tube assembly coupled to the pocket and the inlet end (4/3 interface) of the inner and outer tube (3)s for conveying the gas.

Ishii teaches gas delivery system (91, 89, 85; Figure 4) for a wafer processing apparatus (column 3, lines 37-49). Specifically, Ishii teaches:

- ii. a gas supply port (91; column 8, lines 16-22) comprising a pipe {block} having a pocket (conduit volume) formed therein, the pocket being sealed with a cover (pipe 91) to create a confined passage (conduit volume), and a gas supply connector (92) coupled to the pocket for receiving a gas and a hollow tube (89) assembly coupled to the pocket

Art Unit: 1763

It would have been obvious to one of ordinary skill in that art at the time the invention was made to replace the gas conduit of Soichiro Kawakami and Ohashi with Ishii's gas supply port comprising a block instead of a pipe shape.

Motivation to replace the gas conduit of Soichiro Kawakami and Ohashi with Ishii's gas supply port comprising a block instead of a pipe shape is to provide an alternate and equivalent means for process gas delivery. Additionally, it has been established that the shape of a container is a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container is significant (In re Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966); MPEP 2144.04).

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Soichiro Kawakami (JP61037969) and Ohashi (JP10-177960) in view of Lemp (USPat. 4,836,246). Soichiro Kawakami and Ohashi are discussed above. However Soichiro Kawakami and Ohashi do not teach one or more standoff spacers attached to the elongated inner tube to axially align the elongated inner tube inside the outer tube.

Lemp teaches a similar gas distribution arrangement (Figure 1; column 2, lines 24-40). Specifically, Lemp teaches a standoff spacer (16, Figure 1) attached to the elongated inner tube (32) to axially align the elongated inner tube (32) inside the outer tube (12).

It would have been obvious to one of ordinary skill in that art at the time the invention was made to add a standoff spacer attached to the elongated inner tube to axially align the elongated inner tube inside the outer tube in the Soichiro Kawakami and Ohashi apparatus as taught by Lemp.

Art Unit: 1763

Motivation to add a standoff spacer attached to the elongated inner tube to axially align the elongated inner tube inside the outer tube in the Soichiro Kawakami and Ohashi apparatus as taught by Lemp is to support the elongated inner and outer tubes (column 2, lines 35-40).

6. Claims 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Soichiro Kawakami (JP61037969) and Ohashi (JP10-177960) in view of DeDontney, Jay B. et al (USPat. 5,849,088). Soichiro Kawakami and Ohashi are discussed above. Soichiro Kawakami and Ohashi do not teach at least one injector assembly having at least one port for receiving the gas delivery metering tube. Soichiro Kawakami and Ohashi do not teach at least one shield assembly having at least one plenum for receiving the gas delivery metering tube.

DeDontney teaches a similar gas delivery system (Figure 3; column 5, line 61 – column 6, line 34). Specifically, DeDontney teaches an injector (14, Figure 3) and at least one shield assembly (40c,d; Figure 4) having at least one plenum (78) for a gas delivery metering tube (80).

It would have been obvious to one of ordinary skill in that art at the time the invention was made to provide a port in DeDontney's injector assembly for Soichiro Kawakami' and Ohashi's gas delivery metering tube including replacing DeDontney's gas delivery metering tube with Soichiro Kawakami's and Ohashi's gas delivery metering tube.

Motivation to provide a port in DeDontney's injector assembly for Soichiro Kawakami' and Ohashi's gas delivery metering tube including replacing DeDontney's gas delivery metering tube with Soichiro Kawakami's and Ohashi's gas delivery metering tube is to distribute process gas as taught by Soichiro Kawakami.



***Response to Arguments***

7. Applicant's arguments filed January 13, 2005 have been fully considered but they are not persuasive.

8. Applicant states:

“

Applicant respectfully submits that Ohashi does not teach a gas flow divider as recited in Applicant's amended claims. Ohashi does not teach a disk (Figure 4) having a central orifice (17a) as recited by the Examiner. Column 14 of Ohashi at lines 45 to 48 describes item 17a as small-diameter holes, not a central orifice. Further, the Examiner characterizes item 17b of Ohashi as a plurality of small diameter holes, but again at column 14 lines 45 to 48 Ohashi describes item 17b as large-diameter gas holes. Thus, Applicant respectfully submits that the Examiner appears to have the items backwards, and even if there was a suggestion to reverse such elements, neither elements 17a or 17b are a central orifice forming a first gas flow path as recited in Applicant's amended claims.

“

In response, the Examiner cites that Applicant's present claim amendments only consolidates rejected dependent claims in respective independent claims. As a result, the rejections and arguments proposed by the Examiner in the prior Office Action thus remain pertinent to the pending claims. Further, the Examiner has cited in this and prior actions Japanese patents with no column and line designations. The applied references each only have abstracts. However, regarding Applicant's position of Ohashi's "large-diameter gas holes", from an intractable column and line, is an argument based on a dimensional consideration of the figures. Further,

Art Unit: 1763

proportions of features in a drawing are not evidence of actual proportions when drawings are not to scale. Because the reference does not disclose that the drawings are to scale and is silent as to dimensions, arguments based on measurement of the drawing features are of little value. However, the description of the article pictured can be relied on, in combination with the drawings, for what they would reasonably teach one of ordinary skill in the art. (In re Wright, 193 USPQ 332 (CCPA 1977). MPEP 2125. Further, it is well established that changes in apparatus dimensions are within the level of ordinary skill in the art. (Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); In re Rose, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); In re Rinehart, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); See MPEP 2144.04)

Applicant states:

“

Further, when discussing the flange element, the Examiner references Item 21 of Figure 6 of Ohashi as disclosing an elongated inner tube. Applicant submits that Item 21 of Figure 6 is not an elongated inner tube, but is a hollow annular portion 21 as recited in Ohashi at col. 17, lines 14-15.

“

The Examiner's citation of Ohashi's flange (see L shape of U/21 face, Figure 6) as detailed in numerous previous actions is not Applicant's claim citation of Ohashi's Item 21 of Figure 6. The U/21 interface of Ohashi's Figure 6 is a flange as perscribed by Applicant's claims.

Applicant states:

“

Further, the motivation of Ohashi is not to provide uniform gas flow from a metering tube along its length, as claimed in the present invention. The motivation of Ohashi is to suppress occurrences of gas eddy flow and disturbances of gas flow due to ascent of gases in a reactor (col. 3 lines 40 - 45), and this is achieved by a straightening vane having a specific structure disposed in a specific arrangement so that the gas flow rate is varied between the center portion and the outer peripheral portion in the reactor (col. 3 lines 50 - 54). Ohashi teaches promoting flow of gases at different velocities in order to prevent gas eddy disturbances which lead to particles adhering to the walls which can cause defects ...

“

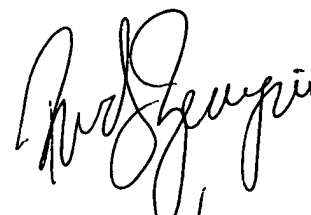
9. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Further, Applicant's very own citation of Ohashi's motivation for invention “ is to suppress occurrences of gas eddy flow and disturbances of gas flow due to ascent of gases in a reactor ” is also consistent with that of Soichiro Kawakami: “To supply stably a reaction gas..” (Purpose), and “...the reaction gas is supplied stably and uniformly...” As a result, in response to applicant's suggestion that Soichiro Kawakami (JP61037969) and Ohashi (JP10-177960) are nonanalogous art, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both Soichiro Kawakami

(JP61037969) and Ohashi (JP10-177960) are each concerned with stable, uniform distribution of processing gases.

10. The remainder of Applicant's arguments are drawn to claims that are unamended. As such, the Examiner's position and rebuttals of Applicant's identical arguments have been addressed in prior actions.

***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official after final fax phone number for the 1763 art unit is (703) 872-9311. The official before final fax phone number for the 1763 art unit is (703) 872-9310. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Gregory L. Mills, at (571) 272-1439.

  
2/7/5